**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per. \_\_\_\_\_\_\_\_**

**DNA Replication**

Each time a new cell is made, the cell must receive an exact copy of the parent cell DNA. The new cells then receive the instructions and information needed to function. The process of copying DNA is called **replication**. Replication occurs in a unique way – instead of copying a complete new strand of DNA, the process “saves” or conserves one of the original strand. For this reason, replication is called semi-conservative. When the DNA is ready to copy, the molecule “unzips” itself and new nucleotides are added to each side.

The image showing replication is similar to the DNA coloring. Note the nucleotides are shown as their 3 parts – sugar (blue), phosphate (pink) and one of the four bases (color codes are below).

Color the replication model on the second page. Notice that several **nucleotides** are floating around, they are waiting to pair up with their match.

Color the thymines orange. T Color the adenines green. A

Color the guanines purple. G Color the cytosines yellow. C

The boxed section shows two new strands of DNA. Color the old strand (including its base) red and the new strand (including its base) green.

After coloring the DNA and the box, answer the following questions.

1.  Why is replication is called “semi-conservative” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. The process of copying DNA is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. What is the first step in DNA replication? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. What enzyme is responsible for “unzipping” the DNA molecule? \_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. What enzyme is responsible for bonding the new nucleotide to its partner?

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6. What enzyme is responsible for “proofreading” the new DNA molecule?

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7. Why is DNA replication important to organisms? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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8. If the sequence on one strand of DNA IS C-A-A-G-T-A-G-G-C-T, what is

the sequence on the complimentary strand? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. List the 3 basic steps of DNA replication:

a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

